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FUTURE WAR PAPER

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Direct, Plan or Influence? Joint C2 on the Future Battlefield

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DISCLAIMER

THE OPINIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

The advantage which a commander thinks he can attain through continued personal intervention is largely illusory. By engaging in it he assumes a task that really belongs to others, whose effectiveness he thus destroys. He also multiplies his own tasks to a point where he can no longer fulfill the whole of them.
-Helmuth von Moltke

Nowhere has the promise of the coming "revolution of the information-age" been more prevalent than amongst future war theorists. Speculation abounds in current literature of a virtual end to the uncertainty, or "fog," of war through the proliferation of information-age technologies that will provide commanders and their staffs with near-perfect awareness and understanding of the battlefield. Former Vice Chairman of the Joint Chiefs of Staff, Admiral Bill Owens (Ret), postulates that today's technology promises to provide future commanders with "…an omniscient view of the battlefield in real time, by day and night, and in all weather conditions--as much of the battlefield and an enemy force to allow vital maneuver and devastating firepower to deliver the coup de grace in a single blow."[I] However, tomorrow's "omniscient" commander may find himself at odds with von Moltke's opening admonishment that direct, personal intervention could eventually be counter-productive. Staffs and organizations will be required to grow and change in order to collect, filter and disseminate more data to commanders seeking awareness. Commanders will likely become increasingly accustomed to *directing* the action of subordinates as well as being *directed* by superiors, based on increased access to battlefield details.

Attempts to mitigate or eliminate uncertainty may lead to what Martin Van Creveld calls *information pathology:*[II]

> While up-to-date technical means of communication and data processing are absolutely vital to the conduct of modern war in all its forms, they will not in themselves suffice for the creation of a functioning command system, and they may, if understanding and proper usage are not achieved, constitute part of the disease they are supposed to cure.

Increasingly overlapped bureaucracies that run the risk of "command" becoming an end unto itself characterize this "disease" of information. Essentially, the endless quest for certainty by increasing data collection, analysis, and dissemination creates the need for new organizations and staffs and expands existing ones to satisfy information requirements. These new and expanded organizations, in turn, create still more demand for information which in turn exerts more pressure for information-starved organizations or staffs. In the end, this cycle becomes disconnected from its original purpose of providing information for the commander and simply "feeds" more information to itself.[III]

This paper will examine the implications that information-age technologies will have on future command and control principles and methods. Specifically, what implications do information-age technologies and future joint command and control concepts have for the future battlefield? Analysis of these factors will show that without careful synthesis, the confluence of joint command and control concepts and information-age technologies could lead to "information pathologies" that will have a degrading, rather than synergistic, effect. Analysis of the topic will begin with a brief examination of command and control in general, including definitions and traditional *methods*, or *systems*, of command. Next, the dominant characteristics and capabilities of likely information-age technologies on the future battlefield will be presented, as well as the vision of future command and control concepts drawn from the Joint Command and

Control Functional Concept (JC2FC). Finally, an analysis of what effect the confluence of these factors will have on future command and control will be presented.

TRADITIONAL COMMAND AND CONTROL

Any examination of future command and control must be done with a common understanding of the applicable definitions and traditional *methods* for its use. According to the *Department of Defense Dictionary of Military and Associated Terms,* the following definitions apply:

> *Command:* The authority vested in an individual of the armed forces for the directions, coordination, and control of military forces.
>
> *Command and Control:* The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission.

Marine Corps Doctrinal Publication (MCDP-6) *Command and Control* has provided a conceptual application of these terms. MCDP 6 describes *command* as the exercise of authority, and *control* as feedback about the effects of the actions taken.[IV] This conceptual framework is derived from, and facilitates, the Marine Corps' adherence to the doctrine of maneuver warfare. The decentralization of execution, through mission-orders, allows subordinates the freedom of action to exploit fleeting opportunities and excludes strict *control* of subordinate forces in terms of *how* they will accomplish their assigned mission. In this sense, the Marine Corps' definition of *control* alters the more narrow interpretation of prescribing *exactly* when, where, and how subordinates are to accomplish assigned tasks.

Systems or *methods* of command describe the general concept of how command and control will be exercised. Van Creveld describes three methods of command in his 1985 work *Command in War*.[V] Command by direction is the oldest method of command

but has been considered mostly obsolete since the middle of the 18th century. The commander attempting to personally direct the movement and actions of all subordinate forces on the battlefield characterizes command by direction. Command by plan attempts to mitigate the limitations of command by direction by "trying to plan every move in advance, relying on highly trained troops and strict discipline to carry out the scheme as ordered."[VI] The U.S. military's emphasis on detailed planning and synchronization is primarily based upon the command by plan method. Command by influence is the third of Van Creveld's methods of command and advocates prescribing only the outline and minimum goals of an effort in advance. The common understanding shared by subordinates of what the goals or objectives are, effectively *influences* their actions continuously. This is the method of command that allows mission-orders to facilitate the use of maneuver warfare as advocated by MCDP-6. These ideas are neither exclusive to the Marine Corps, nor are they new.

The terms command by influence, mission-orders, and directive control are largely interchangeable and are rooted in the German concept of *Auftragstaktik*. *Auftragstaktik* originated in the early 19th century after the Prussian army suffered disastrous defeats at the hands of Napoleon. At its core, Auftragstaktik prescribes:

> The military leader informs what his intention is, sets clear achievable objectives, and provides the required forces and resources. He will only order details regarding execution if measures which serve the same objective have to be harmonized or if political or military constraints require it.[VII]

Command by influence is widely considered the preferred method of command because it allows commanders to adapt to changing circumstances, exercise flexibility, demonstrate initiative, anticipate events, and gain tactical and operational advantage. Current joint and Marine Corps doctrines provide evidence of the preference for command by

influence by advocating the use of centralized planning and decentralized execution, which are core tenets of command by influence.

INFORMATION-AGE AND THE FUTURE BATTLEFIELD

The grid will be the globally interconnected, end-to-end set of information capabilities, associated processes, and people to manage and provide information on demand to warfighters, policy makers, and support personnel.
-Joint Vision 2020

The statement above describes what most theorists believe the future battlefield command and control architecture will look like. The current DoD Transformation guidance expresses the requirement to "Build a collaborative network of networks, populated and refreshed with quality intelligence and non-intelligence data, both raw and processed, to enable forces to build a shared awareness relevant to their needs."[VIII] In many ways this "network of networks" is already being realized through the proliferation of networked planning tools, battlefield intranets, and position-location devices at the small-unit and individual vehicle level. This is not a scientific analysis and will not address the specific technological changes and developments that will characterize the future command and control architecture. However, the fact that information-age technologies are developing at near-exponential rates and will be used, if not developed, by the future U.S. military is accepted for the purpose of examination. The general goal, according to most information-age advocates, is to enhance the warfighter's command and control decision-cycle through a seamless, integrated, digital information network that also supports the warfighter's weapons systems.

For the purpose of this paper, the future command and control architecture is characterized by the following:

Interconnected: Future forces will have digital and analog communications that are fully connected laterally and vertically to include inter-service, inter-agency, and coalition.

Collaborative: The future command and control environment will facilitate the sharing of data and information across echelons, as well as create "virtual workspaces" for joint, coalition, and inter-agency planning and coordination.

Integrated: This system-of-systems will integrate commands, units, sensors, and platforms in real-time.

JOINT COMMAND AND CONTROL FUNCTIONAL CONCEPT

The topic of command and control in the information age is not a new one and is not without guiding concepts. The Joint Command and Control Functional Concept (December 2003, DRAFT) (JC2FC) addresses the issue in a comprehensive fashion and serves to "operationalize" the Chairman of the Joint Chiefs of Staff (CJCS) vision with regard to future command and control.[IX] The JC2FC describes future command and control in the following manner:

> The central idea for future Joint C2 is that it will be agile across the range of military operations. Joint forces, interagency, multinational partners, and non-governmental organizations will be able to rapidly respond and decisively execute commander's intent in a complex, uncertain, and dynamic operating environment.[X]

JC2FC postulates that Joint C2 will provide the commander of the future with

> an ability to have a networked, dispersed, joint force that can work together in a virtual problem space, accessing any piece of information, any place and at any time, in response to any operation across the ROMO (Range of Military Operations).[XI]

The JC2FC is an insightful document that provides comprehensive guidance to future planners concerned with command and control. There are two tenets of the JC2FC that are particularly pertinent to the topic and will be addressed here.

The JC2FC describes "collaborative C2 functions" in addition to what we commonly understand to be "basic C2 functions." The collaborative functions include: Interacting, Sharing (information, awareness, understanding), Deciding, and Synchronizing. According to the JC2FC, collaboration "improves the decisionmaking process by reducing uncertainty and increasing understanding of the operational environment…"[XII] These collaborative C2 functions are designed to interconnect the basic C2 functions of command and agencies across all functions and echelons. This collaboration is the key to what many describe as "information superiority" leading to "decision superiority." "Decisions" made in this collaborative environment are not meant to be decisions by committee, but to be made with the full understanding of other decisions being made in order to ensure unity of effort. Shared understanding, in the collaborative framework, will ideally lead to more decentralized and responsive command and control.

Another tenet of the JC2FC specifically addresses the traditional methods of command and control presented earlier. According to the JC2FC, the collaborative environment of the future will allow commanders to choose which method of command and control is most suited to the situation and to change methods as necessary. Specifically, "The commander can shift the underlying command methodology among command by direction, plan or influence because he has a better understanding of the operating environment and the decision processes of other commanders."[XIII] The choice

can occur during the "course of action development" and "decision" steps because the commanders possess a collective knowledge of "…the decisions and plans of others." From there, "The execution of the plan can be monitored by all commanders with an understanding of the assumptions and information available when the course of action was developed and selected."[XIV]

CONFLUENCE OF FACTORS

The information-age is upon us. The technologies described in this paper are already being fielded in the military and will continue to proliferate in the future. The question becomes how best to use these technologies to command and control military forces, and what problems may arise from their use. The future battlefield could witness a collision between information-age technology employed within the JC2FC concept, and what Moltke, MCDP-6, Van Creveld and others teach about the most effective methods of command and control. The result would be *information pathology* characterized by diffuse, chaotic top-level organizations, an inordinate amount of information to coordinate, and a tendency toward centralization with commanders seeking more information to direct actions by "remote control".[XV] Specifically, this potential collision could create: 1) a compression of the levels of war; 2) a tendency to command by direction; and 3) large, overburdened staffs trying to feed more data to commanders starved for relevant information.

COMPRESSED LEVELS OF WAR

Modern military doctrine generally accepts that there are three levels of war, with the operational level serving as that vital link between tactics and strategy. As technology moves commanders closer to an omniscient position on the battlefield, there

is potential to "squeeze" out the operational level commander. When the Joint Chiefs, or even the White House, have as much information as the battalion commander, why would they not make decisions regarding the latter's actions? This criticism has been levied against technology since the inception of position location systems over a decade ago, but it takes on a more profound meaning in the context of the "system of systems" of the future.

One could argue that the character of information-age warfare will be so different as to negate the need for operational level commanders. Although the JC2FC does not maintain that argument, the idea that a commander of the future could choose a method of command (including command by direction) suggests a similar argument. If senior level commanders choose to command by direction and have the interconnected and integrated network to direct the action of small units and weapons platforms, the operational level of war could certainly be eliminated at least temporarily.

The JC2FC answers this criticism by contending that the collaborative environment simply raises awareness and understanding across all echelons, but does not change the commanders' responsibility or prerogative at any level. That assertion is true so long as all participants adhere to it. The true problem is that the "virtual workspace" can potentially encompass all levels of war. Even if the senior commander chooses to command by influence, it will be difficult to adhere to the spirit and intent of command by influence within the new framework. At best, the three levels of war will co-exist and be "compressed" into the same virtual collaborative environment. Compression occurs because decisions and actions at each level will occur near-simultaneously and will have an immediate impact on decisions and actions at the other levels. This compression is

contrary to the fundamental concept of the levels of war that dictates broader, more comprehensive guidance and requirements at the strategic level that become more detailed and focused as they near tactical execution. In other words, the levels of war were designed to exist separately, but be nested by tactical purpose, operational objective, and strategic aim.

TENDENCY TO COMMAND BY DIRECTION

Closely linked to compression of the levels of war is the tendency to command by direction. Why wouldn't senior commander direct tactical actions if they had the information and capability to do so? Early U.S. Army experiments with fully digitized Brigade Combat Teams (BCT) support this potential pitfall. Colonel Rick Lynch who commanded one of the first digital BCTs in the 4th Infantry Division addressed the problem from his own experience:

> I had visibility on the location of each and every vehicle in the 1BCT. For example, I could focus in on the actions of D32-the wingman tank of the 3d platoon, Delta Company, 3-66 Armor. Then, if I chose to, I could tell D32 where to go and what to do –totally circumventing three layers of the chain of command. But I chose not to do that…. However, there are individuals who, given the opportunity to micro-manage their units, will do so. This will have a disastrous effect on subordinate leadership.[XVI]

In the collaborative, networked environment of the future, it's hard to imagine that all commanders will show the discipline and understanding of Colonel Lynch. The temptation for commanders to command by direction in this collaborative environment is only exasperated by the stress of combat. It is simple human nature for leaders to take personal charge of situations when they are present and have awareness. In the new environment the senior leaders are always "present" and have awareness.

As mentioned above, this criticism may not be at odds with the JC2FC concept of choosing the method of command and control appropriate for each circumstance. But

could a commander, and his subordinate structure, seamlessly "switch" methods of command? It seems more likely to create confusion in the collaborative environment if some operations or campaigns are executed by direction while others use a command by plan or influence design. It would be difficult to delineate where and when each level of command was exercising which method of command.

There is another factor that could lead the omniscient leader to command by direction more often than by other methods. The simple act of creating shared awareness and understanding will imply some degree of responsibility to each successive level of command. Not to suggest that ignorance is bliss, but a senior commander who becomes aware of all planning being done in the collaborative environment would be hard-pressed to ignore tactical details that he will be increasingly held responsible for. When you combine the 24-hour news cycle with the proliferation of real-time collaborative planning and execution, commanders will be driven to command by direction.

A final consideration is the effect that command by direction can have on subordinates who become accustomed to being micro-managed. In behavioral science it's called "learned helplessness," and is characterized by an inability to take initiative, and an over-reliance on specific directions during periods of uncertainty. [XVII] The risk in the future battlefield scenario is that future leaders will be raised in the command by direction tradition as senior leaders are increasingly driven to that method by technology and C2 concepts. Over time, a generation of senior leaders could learn to be helpless by constantly being monitored and instructed on what to do in the collaborative system of systems.

OVERBURDENED STAFFS, UNAWARE COMMANDERS

A third potential byproduct of information-age technologies is the creation of large, overburdened staffs seeking and receiving more information than they can process, leaving commanders wanting for relevant information. This is the proverbial man dying of thirst in a sea of water he cannot drink. As MCDP 6 states: "[T]echnology can be part of the problem, contributing to information overload and feeding the dangerous illusion that certainty and precision in war are not only desirable, but attainable."[XVIII] As the "system of systems" becomes more robust and complex, staffs at each level of the system will need to have trained personnel capable of managing their portion. This is not like maintaining a suite of basic analog radios, a task that can be done by non-specialized personnel. Trained network and data specialists are increasingly required at lower echelons of command and could theoretically be needed at the smallest unit level in the future.

In addition to just maintaining connectivity in the architecture, the increased flow of information will require trained personnel to filter, analyze and disseminate information. All of this will be done with the assumption that C2 operators understand the commander's information requirements and that the systems support the efficient collection, analysis and dissemination of those requirements. In the end, the information critical to a commander's understanding and decision-making may be lost in a steady stream of data, position information, and readiness statistics. Admiral James Ellis, Commander-in-chief of NATO's Allied Forces Southern Europe during operations in Kosovo noted that "information saturation is additive to the 'fog of war'…uncontrolled, it will control you and your staffs." Ellis goes on to state that sensory overload can

actually lengthen decision cycle times and become a "voracious consumer of leadership and key staff working hours."[XIX]

CAREFUL INTEGRATION

To avoid potential information pathology, future technologies need to be integrated into a C2 concept that accounts for a massive increase in information. Furthermore, future C2 concepts must not ignore what is historically understood about the most effective methods of C2. A full solution to the problem is beyond the scope of this analysis, although several points emerge that will be highlighted here.

To avoid future pathologies the primary focus must be on the C2 concept, which provides the framework for commanders and their staffs to operate within. A viable concept should accept and acknowledge the advantages of command by influence as a method of command. The notion of switching between methods of command as the situation dictates, or the commander sees fit should be omitted altogether. A more realistic approach is to recognize that there are certain functional areas, such as logistics, that do lend themselves to command by direction and could leverage technology to support that method.

Equally important to avoiding information pathology is leader and staff training. Simply put, leaders will need to be trained to show the kind of restraint on the digitized battlefield that Colonel Lynch showed at 1BCT. Professional military education needs to continue to teach and stress operational art as a vehicle for commanders to understand their role on the battlefield. A concept that can help commanders avoid command by direction is assessment. Assessment is not new, but it will become more important in the collaborative virtual environment. An efficient and accurate program of assessment can

provide commanders at multiple levels a real-time status of "how we are doing." That assessment should not only evaluate progress toward established objectives, but should be linked to established branches or sequels that can prevent the temptation to personally direct the actions of individual weapons platforms or small units.

Future staffs also need to understand the concept of "information management" as much more than a G/J-6 function of establishing the network, or a G/J-3 function of establishing the battle rhythm of meetings and reports. Information management includes all activities involved in the identification, collection, filtering, fusing, processing, focusing, dissemination, and usage of information. It is a function that can no longer "reside" in any one staff function, but cuts across all functional areas. Like assessment, information management is not new, but will take on increased importance and scope on the future battlefield.

CONCLUSION

Thus, in the end, the effort to minimize the cost-benefit ratio by the coordinated action of thousands of little cogs, all to be interconnected and fine-tuned to the performance of their missions in the hands of a supreme management team, backfired.
-Van Creveld

Van Creveld's description of information pathology could be prophetic with respect to tomorrow's battlefield. This is not to suggest that information-age technology is a bad thing, or that it should not be developed and used by military forces. Instead, information-age technologies need to be understood for what they can, and cannot, provide. Future command and control architectures can provide real-time intelligence, shared across the battlespace, with sensor-to-shooter and decisionmaker links capable of exploiting such information. Such technology can provide commanders at all levels with

access to information required to make better decisions and synchronize all warfighting functions toward the accomplishment of tasks and missions. Command and control architecture, however, will never be a panacea that can take away the uncertainty and friction that are inherent in warfare. Furthermore, to believe that commanders in the collaborative, networked, and integrated system of units, decision-makers, and weapons will be able to adhere to time-tested methods of command, like Auftragstaktik, may be overly optimistic.

The information age will undoubtedly provide a benefit to those military forces that are able to create an asymmetric advantage over their adversaries, but if the technology is not carefully integrated and used it could have a debilitating effect. It could lead to information pathologies that degrade, rather than enhance, command and control performance.

[I] Bill Owens, Adm (Ret), *Lifting the Fog of War*, p. 14
[II] Martin L. Van Creveld, *Command in War*, (Cambridge, Harvard Press, 1985), p. 258.
[III] The concept of "Information Pathologies" is summarized primarily from Chapter 7 of *Command in War* by MartinVan Creveld.
[IV] United States Marine Corps, MCDP 6, *Command and Control*, Washington D.C. 1996, p. 40
[V] Van Creveld's concepts of command and control are based upon chapters 2-5 of his work Command in War (Cambridge, Mass.: Harvard Univ. Press, 1985).
[VI] Van Creveld, p. 53
[VII] MajGen Werner Widder, German Army, "3 Auftragstaktik and Innere Fuhring: Trademarks of German Leadership" Military Review, Sep/Oct 2002
[VIII] Department of Force Transformation, "Military Transformation, a Strategic Approach", Department of Defens, Fall 2003, p. 31
[IX] Joint Staff, C2 Capabilities Division, *Joint Military Command and Control Functional Concept* (DRAFT), December 2003, p. v.
[X] JC2FC, p. vi
[XI] JC2FC, p. vi
[XII] JC2FC, p. 12
[XIII] JC2FC, p. 20
[XIV] JC2FC, p. 18
[XV] Van Creveld, chapter 7.

[XVI] Rick Lynch Col., "Commanding a Digital Brigade Combat Team," Special Edition Newsletter 01-21 (Fort Leavenworth, KS: Center for Army Lessons Leaarned, 2001), 1.
[XVII] The idea of Learned Helplessness is credited to a 1965 study by Martin E.P. Seligman. General information is found on the Helplessness Homepage at www.psych.upenn.edu
[XVIII] MCDP 6, p. 59.
[XIX] Timothy Thomas, "Kosovo and the Current Myth of Information Superiority," Parameters, Spring 2000, pp. 13-29.